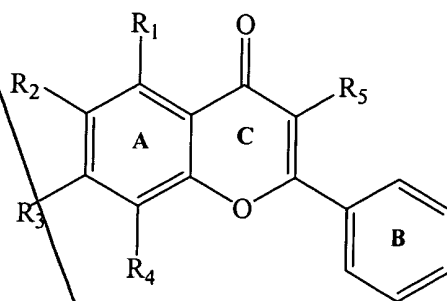


## CLAIMS

What is claimed is

1. A method for inhibiting the cyclooxygenase enzyme COX-2 comprising administering a composition comprising a Free-B-Ring flavonoid or a composition containing a mixture of Free-B-Ring flavonoids.

2. The method of claim 1 wherein said Free-B-Ring flavonoid is selected from the group of compounds having the following structure:



wherein

$R_1$ ,  $R_2$ ,  $R_3$ ,  $R_4$ , and  $R_5$  are independently selected from the group consisting of -H, -OH, -SH, -OR, -SR, -NH<sub>2</sub>, -NHR, -NR<sub>2</sub>, -NR<sub>3</sub><sup>+</sup>X<sup>-</sup>, a carbon, oxygen, nitrogen or sulfur, glycoside of a single or a combination of multiple sugars including, aldopentoses, methyl-aldopentose, aldohexoses, ketohexose and their chemical derivatives thereof;

wherein

R is an alkyl group having between 1-10 carbon atoms; and

X is selected from the group of pharmaceutically acceptable counter anions including, hydroxyl, chloride, iodide, sulfate, phosphate, acetate, fluoride and carbonate.

3. The method of claim 1 wherein said Free-B-Ring flavonoid is obtained by organic synthesis.

4. The method of claim 1 wherein said Free-B-Ring flavonoid is isolated from a plant part.

selection of species organic synthesis in plant and which plant and which specific flavonoid.

pick one or

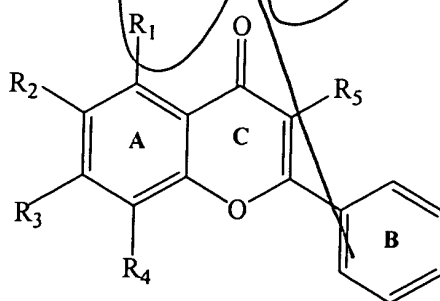
5. The method of claim 4 wherein said plant is selected from a family consisting of Annonaceae, Asteraceae, Bignoniaceae, Combretaceae, Compositae, Euphorbiaceae, Labiatae, Lauranceae, Leguminosae, Moraceae, Pinaceae, Pteridaceae, Sinopteridaceae, Ulmaceae and Zingiberacea.

6. The method of claim 4 wherein said plant is selected from a genus consisting of Desmos, Achyrocline, Oroxylum, Buchenavia, Anaphalis, Cotula, Gnaphalium, Helichrysum, Centaurea, Eupatorium, Baccharis, Sapium, Scutellaria, Molsa, Colebrookea, Stachys, Origanum, Ziziphora, Linderia, Actinodaphne, Acacia, Derris, Glycyrrhiza, Millettia, Pongamia, Tephrosia, Artocarpus, Ficus, Pityrogramma, Notholaena, Pinus, Ulmus and Alpinia.

7. The method of claim 4 wherein the Free-B-Ring flavonoid is isolated from a plant part selected from the group consisting of stems, stem barks, twigs, tubers, roots, root barks, young shoots, seeds, rhizomes, flowers and other reproductive organs, leaves and other aerial parts.

8. A method for preventing and treating COX-2 mediated diseases and conditions comprising administering to a host in need thereof an effective amount of a composition comprising a Free-B-Ring flavonoid or a composition containing a mixture of Free-B-Ring flavonoids and a pharmaceutically acceptable carrier.

9. The method of claim 8 wherein said Free-B-Ring flavonoid is selected from the group of compounds having the following structure:



R<sub>4</sub>, and R<sub>5</sub> are independently selected from H, -OR, -NH<sub>2</sub>, -NHR, -NR<sub>2</sub>, -NR<sub>3</sub><sup>+</sup>X<sup>-</sup>, a single or a combination of multiple sugar moieties such as monosaccharides, disaccharides, oligosaccharides, hexoses, keto-hexose and their chemical derivatives; R<sub>6</sub> is a hydroxyl group having between 1-10 carbon atoms; R<sub>7</sub> is selected from the group of pharmaceutical salts consisting of chloride, iodide, sulfate, phosphate, acetate, succinate, fumarate, maleate, tartrate, citrate, malate, lactate, methanesulfonate, benzenesulfonate, p-toluenesulfonate, sodium salt, potassium salt, calcium salt, magnesium salt, zinc salt, aluminum salt, iron salt, copper salt, cobalt salt, nickel salt, lithium salt, ammonium salt, quaternary ammonium salt, organic amine salt, and inorganic acid salt.

method of claim 8 wherein said Formula I is:

method of claim 8 wherein said Formula II is:

method of claim 11 wherein said plant species is selected from the family Asteraceae, Bignoniaceae, Combretaceae, Euphorbiaceae, Leguminosae, Moraceae, Pinaceae, Rubiaceae, and Urticaceae.

method of claim 11 wherein said plant species is selected from the genus Aegle, Oroxyllum, Buchenavia, Anaphalis, Baccharis, Sapium, Scutellaria, Lippia, Zinnia, Lindera, Actinodaphne, Acacia, Artocarpus, Ficus, Pityrogramma,

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14. The method of claim 11 wherein the Free-B-Ring flavonoid is isolated from the plant part selected from the group consisting of stems, stem barks, twigs, tubers, roots, root barks, young shoots, seeds, rhizomes, flowers and other reproductive organs, leaves and other aerial parts.

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15. The method of claim 8 wherein the COX-2 mediated disease or condition is selected from the group consisting of inflammation associated with osteoarthritis, rheumatoid arthritis, menstrual cramps, Systemic Lupus Erythromatosis, psoriasis, chronic tension headache, migraine headaches, inflammatory bowel disease; topical wound and minor inflammation conditions selected from the group consisting of minor abrasions, sunburn and contact dermatitis; and solid cancers. sp.

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16. The method of claim 8 wherein the Free-B-Ring flavonoid composition is comprised of 0.01% to 100% of the Free-B-Ring flavanoid.

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17. The method of claim 8 wherein the composition is administered in a dosage selected from 0.01 to 200 mg/kg of body weight.

18. The method of claim 8 wherein the routes of the administration are selected from the group consisting of oral, topical, suppository, intravenous, and intradermic, intragaster, intramusclar, intraperitoneal and intravenous administration in an appropriate pharmaceutical formula.

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add a4 > add c1 >